

REMARKS

Initially, it is requested that the Examiner issue another Examiner-initialed copy of the Form PTO-1449 submitted to the PTO on May 14, 2004, because the Examiner-initialed copy thereof forwarded by the Examiner with the August 16, 2004 Office Action included the Examiner's initials adjacent only three of the five references listed on the form. Specifically, the Examiner did not provide his initials adjacent references AO and AP, although the Information Disclosure Statement was fully compliant with respect to these additional two references.

By this amendment, claims 1-9 have been cancelled, and claims 10-17 have been added. Thus, claims 10-17 are now active in the application. Reexamination and reconsideration of the application is respectfully requested.

The specification and abstract have been carefully reviewed and revised to correct grammatical and idiomatic errors in order to aid the Examiner in further consideration of the application. The amendments to the specification and abstract are incorporated in the attached substitute specification and abstract. No new matter has been added.

Attached hereto is a marked-up version of the changes made to the specification and Abstract by the current amendment. The attachment is captioned "**Version with markings to show changes made.**"

At the top of page 2 of the Office Action, the Examiner indicated that the specification is replete with terms that are not clear, concise and exact and should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Although it is submitted that the problems noted by the Examiner constitute informalities and do not result in a failure of the specification to comply with 35 U.S.C. 112, first paragraph, the specification has been thoroughly reviewed and revised in order to address all of the concerns raised by the Examiner, and to otherwise improve the English grammar and U.S. form of the specification and Abstract.

At the bottom of page 2 and top of page 3 of the Office Action, the drawings were objected to because Fig. 4 should be labeled as "Prior Art". Accordingly, a replacement drawing sheet for Fig. 4 is submitted herewith, in order to so label Fig. 4 as "Prior Art". Entry and approval of this replacement formal drawing sheet of Fig. 4 is respectfully requested.

Amendments to the Drawings

A replacement drawing sheet for Fig. 4 is submitted herewith, in order to label Fig. 4 as "Prior Art", in accordance with the Examiner's requirement in the paragraph spanning pages 2 and 3 of the Office Action.

Entry and approval of the replacement drawing sheet is respectfully requested.

At the bottom of page 3 and top of page 4 of the Office Action, claims 1-9 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is believed moot in view of the cancellation of claims 1-9. Furthermore, new claims 10-16 have been carefully drafted to avoid the problems specifically enumerated by the Examiner and to otherwise clearly comport with the requirements of 35 U.S.C. 112, second paragraph.

On pages 4 and 5 of the Office Action, claims 1-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over either WO '462 (WO 01/72462) or JP '578 (JP 1-162578) in view of JP '246 (JP 11-277246). This rejection is also believed moot in view of the cancellation of claims 1-9. Furthermore, this rejection is clearly inapplicable to new claims 10-16, for the following reasons.

With exemplary reference to the drawing figures, new independent claim 10 sets forth a welding arrangement comprising: a powder having a constituent material; a work piece 6 having a constituent material the same as the constituent material of the powder; a feeder 2 for feeding the powder to the work piece 6; a welding torch 3 having a plasma gas path 13 for feeding plasma gas toward the work piece 6, an electrode 12 for generating a plasma between the welding torch 3 and the work piece 6, and powder nozzles 8 for directing the powder fed by the feeder 2 toward a focal point and transferring the powder to the work piece 6, the focal point being defined at an intersection of axes of the powder nozzles 8 and an axis of the plasma gas path 13 (see Fig. 1); wherein a distance d from the welding torch 3 to the focal point is longer than a distance h from the welding torch 3 to the work piece 6, so that the focal point is located in an interior of the work piece 6 (see Fig. 1).

Similarly, new independent method claim 14 sets forth a welding method comprising: providing a powder having a constituent material; providing a work piece 6 having a constituent material the same as the constituent material of the powder; feeding the powder to the work piece 6; providing a welding torch 3 having a plasma gas path 13, an electrode 12 and powder nozzles 8, and situating the welding torch 3 and the work piece 6 relative to each other; operating the welding torch 3 by feeding plasma gas toward the work piece 6 via the plasma gas path 13, generating a plasma between the welding torch 3 and the work piece 6 via the electrode 12 and directing the powder fed to the work piece 6 toward a focal point and transferring the powder to

the work piece 6 via the powder nozzles 8, the focal point being defined at an intersection of axes of the powder nozzles 8 and an axis of the plasma gas path 13; wherein, in situating the welding torch 3 and the work piece 6 relative to each other, a distance from the welding torch 3 to the focal point is made longer than a distance from the welding torch 3 to the work piece 6, so that the focal point is located in an interior of the work piece 6.

Thus, each of the independent claims 10 and 14 now specifically defines the focal point as being at an intersection of axes of the powder nozzles 8 and an axis of the plasma gas path 13, and further requires a distance from the welding torch to the focal point to be longer than a distance from a welding torch to the work piece so that the focal point is located in an interior of the work piece.

In contrast, the WO '462 reference discloses a manner of preventing powder from attaching to the cover (inner cylinder) of the electrode, and drawing the inner cylinder inwardly, away from an adjacent portion of the inner cylinder of the powder cover (outer cylinder), but there is no description in the WO '462 reference of the focal point, such as that defined in the present claims 10 and 14. Although Figs. 1 and 2 of the WO '462 reference show a recess in the work piece 12, it is noted that claims 10 and 14 specifically define the focal point as being at the intersection of the axes of the powder nozzles and the plasma gas path. In the drawing figures of the WO '462 reference, it would appear that these axes intersect approximately at the upper surface of the work piece 12 and, in any event, there is clearly no teaching or suggestion that the focal point, as defined in claims 10 and 14, is located in an interior of the work piece 12, as required by claims 10 and 14.

Also in contrast to the present arrangement of claim 10 and the method of claim 14, the JP '578 reference discloses an improvement in a plasma pad-welding torch for which, as shown in Fig. 1, the focal point is at a distance X from the torch, whereas the work piece 100 is at a distance L from the torch, such that the focal point is not in an interior of the work piece 100. Fig. 3 shows a prior art arrangement described in the background of the '578 reference. In this Fig. 3 arrangement, the focal point appears to be at the top surface of the work piece. Therefore, Fig. 3 also does not disclose or suggest a focal point in an interior the work piece.

The JP '246 reference was cited by the Examiner for teaching "that it is conventional to blend work materials in powder form to the welding arc and doing the same leads to an extremely hard weld, beneficial." Without acquiescing to the propriety of this assertion by the Examiner, it is noted that, in any event, the JP '246 reference provides no teaching or suggestion that would have obviated the above-discussed shortcomings of the WO '462 reference and the JP '578 reference.

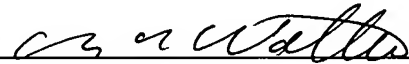
Accordingly, because of the above-mentioned difference between the present invention as recited in each of claims 10 and 14 and the prior art of record, it is submitted that a person having ordinary skill in the art would clearly not have been motivated to modify either the WO '462 reference or the JP '578 reference or to make any combination of the references of record in such a manner as to result in or otherwise render obvious the present invention as recited in either of claims 10 and 14. Therefore, it is respectfully submitted that independent claims 10 and 14, as well as the dependent claims 11-13 and 15-17, are clearly allowable over the prior art of record.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is earnestly solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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